Claims

1. An electrical discharge machining device comprising a tool electrode (F) and a workpiece electrode (P) forming the poles of a machining gap (G), at least one voltage/current source (U1) connected by an electrical circuit (E) to the tool electrode (F) and to the workpiece electrode (P) and configured for generating electrical pulses and for establishing the initiation of electrical discharges between the tool electrode (F) and the workpiece electrode (P), characterized in that it comprises at least one capacitive element (C1), arranged inside one or both of the machining heads, preferably close to or within the contacts (W1, W2) located between said electrical circuit (E) and the tool electrode (F), connected in series between the source (U1) and one of the poles of the machining gap (G) and whose characteristics are such that it prevents the DC components of the electrical pulses coming from the source (U1) from being applied across the machining gap (G) and to allow the variable current components coming from the source (U1) to flow, and such that it reduces the total capacitance (Ceq) of said electrical circuit (E) with respect to the machining gap (G).

2. The machining device as claimed in claim 1, characterized in that it comprises a second capacitive element (C5) connected in series between a second pole (P2) of the first source (U1) and arranged close to the workpiece electrode (P).

3. The machining device as claimed in either of claims 1 and 2, characterized in that the workpiece electrode (P) is mounted on a holder (T) via an insulator (J).

4. The machining device as claimed in either of claims 1 and 2, characterized in that it comprises at least one switch (SW3, SW4) installed across the terminals of

the capacitive element or elements (C1, C5) and designed to short-circuit or to render active the capacitive element across whose terminals it is installed.

5. The machining device as claimed in claim 1, characterized in that the tool electrode is a wire (F) and in that the capacitive element (C1) is formed by a wire guide (WG) one part of which, in contact with the wire (F), is made of insulating material and another part of which is made of conducting material.

6. The machining device as claimed in one of the preceding claims, characterized in that the source (U1) comprises a short-circuiting device for producing electrical pulses with steep voltage rising edge slopes.

7. The machining device as claimed in one of the preceding claims, characterized in that the source (U1) is configured so as to produce electrical impulses with a frequency in the range 0.1 to 10 MHz, with a voltage amplitude in the range 60 to 300 V and with a positive or negative voltage rising edge slope in the range 0.1 to 5 V/nS.

8. The machining device as claimed in one of the preceding claims, characterized by a self-inductance element (Lm) galvanically connected to the two poles of the machining gap (G).

9. The machining device as claimed in claim 8, characterized in that the inductance value of said self-inductance element (Lm) is chosen such that the resonance frequency (Fo) of the electrical circuit is low relative to the frequency of the electrical pulses of the first source (U1).

10. The machining device as claimed in claim 9, characterized in that the value of said inductance (Lm) is chosen such that the ratio of the frequency of the electrical pulses to the resonance frequency (Fo) is in the range 10 to 500, preferably between 50 and 150.

11. The machining device as claimed in claim 10, characterized by an adjustable DC voltage source (Sm) connected in series with the self-inductance element (Lm) between the two poles of the machining gap (G).

12. The machining device as claimed in either of claims 10 and 11, characterized by a switch (SW5) connected in series with the self-inductance element (Lm) between the two poles of the machining gap (G).